Overview

Windows-powered unified storage built on industry standards

You have better things to do than worry about storage. You're juggling multiple management interfaces, security concerns, and shrinking backup windows -- all while your users demand more and more space. You need a shared storage solution that's powerful and easy to manage, and you need it now.

HP StorageWorks X1000 G2 Network Storage Systems are the fast and easy way to add Windows-powered shared storage to your IT environment. They're versatile unified storage, so you get more for your money since it can be a file server, an iSCSI target for application/virtual environment storage, or both. You'll spend less time and effort on maintenance and management once you consolidate to a centralized shared storage system, and industry standards will protect your investment by providing compatibility with your network and applications. The operating system is pre-installed and comes with HP StorageWorks X1000 Automated Storage Manager, so you'll be up and running in minutes.

What is an X1000 G2 Network Storage System?

HP StorageWorks X1000 G2 Network Storage Systems are enhanced Windows-powered shared storage solutions for your datacenter, branch office, or workgroup environment. They are built on industry-standard HP ProLiant servers and come with the Microsoft® Windows Storage Server 2008 R2 operating system pre-installed. Like many Network Attached Storage (NAS) devices, they connect via Ethernet, offer optimized file serving for heterogeneous clients, and are designed to install in minutes. They can also connect to servers or virtual machines to host application storage with the included iSCSI target. Since HP X1000 G2 Network Storage Systems are Windows-based, integration into your Windows environment is easy, your antivirus and backup applications run right on the box, and management has a familiar look and feel. So you can add shared storage to your network quickly and get back to what matters most: running your business.

What's New

- All X1000 G2 Network Storage Systems now include Windows Storage Server 2008 R2, Standard X64 Edition Operating System
- X1800 G2 Network Storage System now built on a ProLiant DL380 G7 server

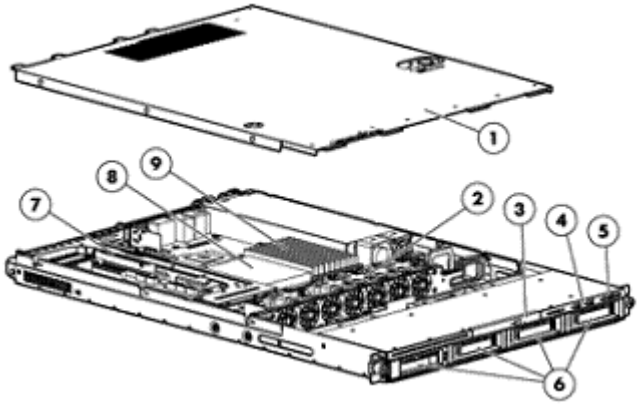
Models

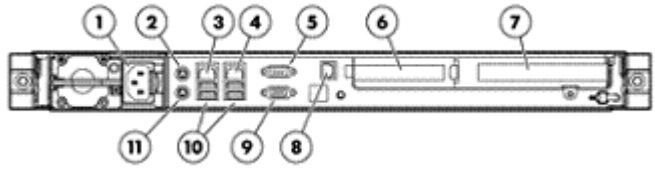
HP StorageWorks X1400 G2 Network Storage System

HP X1400 G2 Network Storage Systems are 1U rack-mount shared storage solutions that deliver multi-protocol file sharing, print serving, and application storage in a compact and affordable package. They're easy to install and manage, making them perfect for a small workgroup, small business or remote office. The X1400 G2 is built on a HP ProLiant DL320 G6 server.

HP StorageWorks X1400 G2 Network Storage System (no drives pre-configured - at least four drives of the same type/capacity, 146GB or greater, must be ordered for pre-installation of OS in the factory. The OS is not a field installable option.)	BV853A
HP StorageWorks X1400 G2 4TB SATA Network Storage System (4 x 1TB SATA LFF HDDs)	BV854A
HP StorageWorks X1400 G2 8TB SATA Network Storage System (4 x 2TB SATA LFF HDDs)	BV855A

Overview





Front View:

1. Access panel
2. System fans
3. DVD-RW drive
4. USB Ports (2)
5. Power Button, UID Button, and Front LED Indicators
6. Four (4) 3.5" hot-plug SAS/SATA hard drive bays
7. PCIe expansion slot cage
8. Dual-Core Intel® Xeon® processor
9. DDR3 Registered (RDIMM) memory -- nine slots

Rear View:

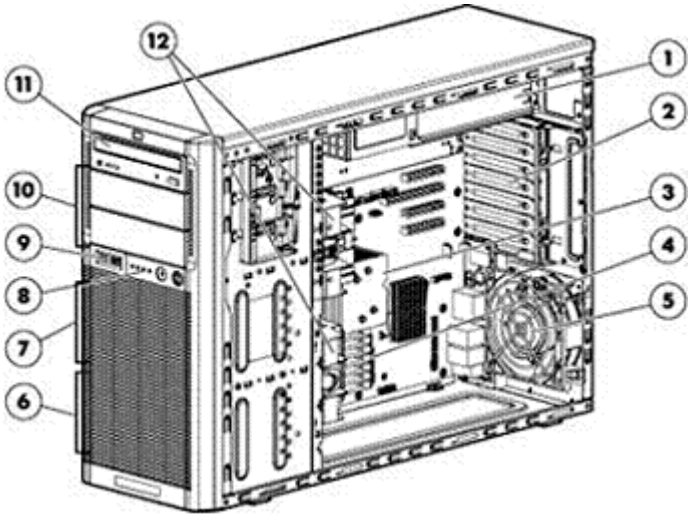
1. Power supply
2. Mouse connector
3. NIC 1 Port
4. NIC 2 Port
5. Serial Port
6. PCIe slot (occupied by Smart Array controller with external SAS port for expandability)
7. PCIe slot (open)
8. Dedicated Integrated Lights-Out 2 management port
9. VGA Port
10. USB Ports (4)
11. Keyboard connector

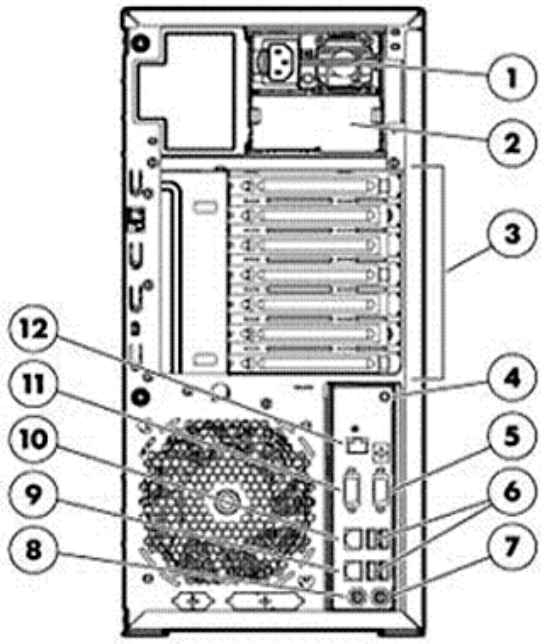
HP StorageWorks X1500 G2 Network Storage System

HP X1500 G2 Network Storage Systems are 5U tower shared storage solutions that deliver high capacity multi-protocol file sharing, print serving and application storage in a compact and affordable package. They're easy to install and manage, making them perfect for a small workgroup, small business or remote office. The X1500 G2 is built on a Hp ProLiant ML330 G6 Server.

NOTE: A country specific power cord option must be ordered with the X1500 G2. See power cord options section.

HP StorageWorks X1500 G2 Network Storage System (no drives pre-configured - at least two drives of the same type and capacity, 146GB or greater, must be ordered for pre-installation of OS in the factory. The OS is not a field installable option.)	BV856A
HP StorageWorks X1500 G2 4TB SATA Network Storage System (4 x 1TB SATA LFF HDDs)	BV857A
HP StorageWorks X1500 G2 8TB SATA Network Storage System (4 x 2TB SATA LFF HDDs)	BV858A





Front View:

1. Power Supply
2. Expansion Slots
3. Dual-Core Intel® Xeon® processor
4. Nine DIMM slots (for 1st Processor)
5. Rear System Fan
6. Hard drive bays 5-8
7. Hard drive bays 1-4
8. LED indicators and power button
9. USB connectors (2)
10. Removable Media Bays
11. Optical Drive Bays
12. Front System Fans

Rear View:

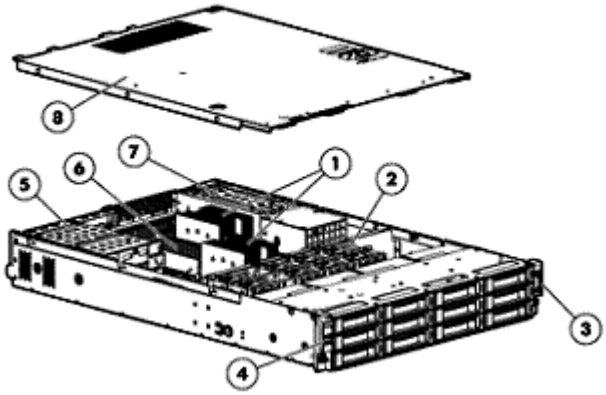
1. Power supply 1
2. Power supply 2 (optional)
3. Expansion slots
4. UID button/LED
5. Video Port
6. Four USB ports
7. Keyboard port
8. Mouse port
9. Network port1
10. Network port2
11. Serial port
12. Dedicated iLO management port

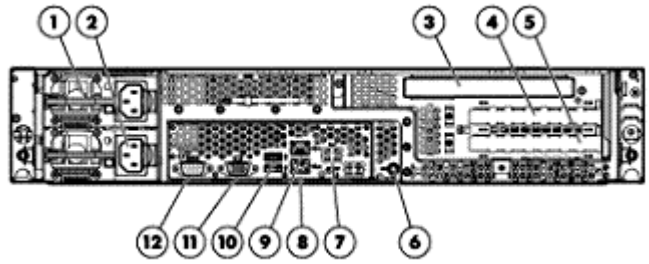
Overview

HP StorageWorks X1600 G2 Network Storage System

HP X1600 G2 Network Storage Systems deliver high capacity and high performance and drives down your cost per GB. Quad-Core processing, up to 24TB internal storage capacity, and ready external expandability enhance this ultra-dense 2U shared storage solution for small, medium, or large IT environments. The X1600 G2 is built on a HP ProLiant DL180 G6 server chassis, with a custom motherboard supporting iLO2 remote management. There are two models of the X1600, one model contains 12 X LFF HDDs in front slots and 2 SFF HDD slots in rear and the other model contains 25 x SFF HDDs in front slots only.

HP StorageWorks X1600 G2 Network Storage System (12 open LFF HDD front slots and 2 x 146GB SAS SFF HDDs in rear slots with pre-installed OS)	BV859A
HP StorageWorks X1600 G2 6TB SATA Network Storage System (6 x 1TB SATA LFF HDDs in front slots for data, 6 open LFF HDD front slots for expansion and 2 x 146GB SAS SFF HDDs in rear slots with pre-installed OS)	BV860A
HP StorageWorks X1600 G2 12TB SATA Network Storage System (6 x 2TB SATA LFF HDDs in front slots for data, 2 x 146GB SAS SFF HDDS in rear slots with pre-installed OS)	BV861A
HP StorageWorks X1600 G2 24TB SATA Network Storage System (12 x 2TB SATA LFF HDDS in front slots for data, 2 x 146GB SAS SFF in rear slots with pre-installed OS)	BV862A
HP StorageWorks X1600 G2 6TB SAS Network Storage System (10 x 600GB SAS SFF HDDs in front slots for data, 13 open SFF HDD front slots for expansion and 2 x 146GB SAS SFF HDDs in front slots with pre-installed OS)	BV864A
HP StorageWorks X1600 G2 13.8 TB SAS Network Storage System (23 x 600GB SAS SFF HDDs in front slots for data, 2 x 146GB SAS SFF HDDs in front slots with pre-installed OS)	BV866A





Front View:

1. Quad-Core Intel® Xeon® processors (one standard, up to two supported)
2. System fans
3. Power Button and Front LED Indicators
4. USB Ports (2)
5. PCIe expansion slot cage
6. DDR3 Registered (RDIMM) memory - twelve slots
7. Power supply cage

Rear View:

1. Redundant hot-plug power supplies
2. Power supply cable socket
3. N/A
4. (2 SFF drives- sku BV859A, BV860A, BV861A, BV862A only)
5. PCIe slot (occupied by Smart Array controller with external SAS port for expandability)
6. UID LED Button
7. Integrated Lights-Out 2 management port

8. Access panel

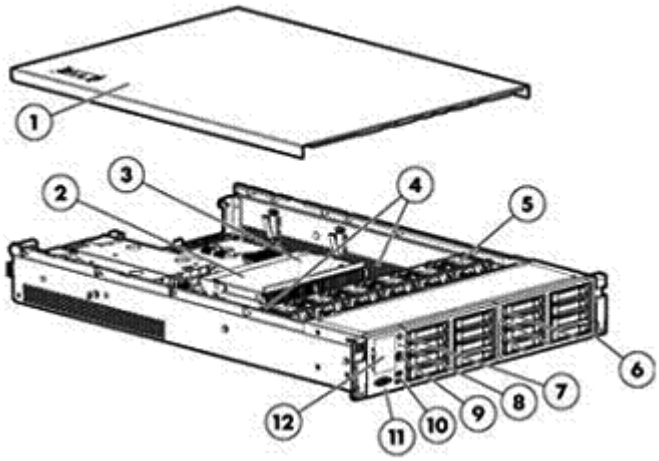
NOTE: Front drive slots can be either 12 LFF or 25 SFF HDDs

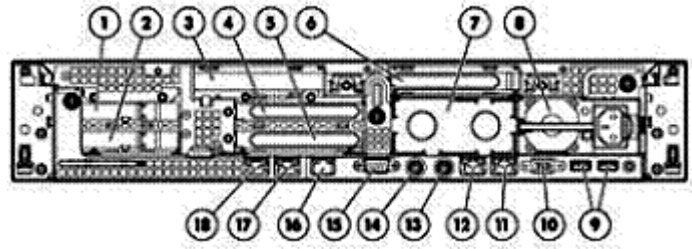
8. NIC 1 Port
9. NIC 2 Port
10. USB Ports (2)
11. VGA Port
12. Serial Port

HP StorageWorks X1800 G2 Network Storage System

HP X1800 G2 Network Storage Systems deliver Enterprise-class performance, expandability, and flexibility. Up to two quad-core processors, four open PCIe slots for additional options, and built-in external SAS connections for additional disk enclosures make it the shared storage solution of choice for medium business or datacenter class IT environments. The X1800 G2 is built on a HP ProLiant DL380 G7 server.

HP StorageWorks X1800 G2 Network Storage System (14 open SFF HDD front slots and 2x146GB SAS SFF HDDs in front slots with pre-installed OS)	BV868A
HP StorageWorks X1800 G2 4.8 TB SAS Network Storage System (8 x 600GB SAS SFF HDDs in front slots for data, 6 open SFF HDDs fronts slots for expansion and 2x146GB SAS SFF HDDs in front slots with pre-installed OS)	BV869A





Front View:

1. Quick removal access panel
2. First Intel Processor
3. Second Intel Processor (optional)
4. Eighteen slots: DDR3 Registered (RDIMM) or Unbuffered (UDIMM) memory
5. Hot-plug fans, full N+1 redundancy
6. Sixteen 2.5" (Small Form Factor) hot-plug bays
7. UID LED button
8. Health LED
9. Power On/Standby button and system power LED
10. USB connectors (2)
11. Video connector

Rear View:

1. PCI slot 5
2. PCI slot 6
3. PCI slot 4
4. PCI slot 2
5. PCI slot 3
6. PCI slot 1
7. Power supply 2
8. Power supply 1
9. USB connectors (2)
10. Video connector
11. NIC 1 connector

12. Systems Insight Display

NOTE: X1800 G2 comes standard with two SFF drive cages providing a total of 16 SFF drive slots (this is not depicted in drawing above)

12. NIC 2 connector
13. Mouse connector
14. Keyboard connector
15. Serial connector
16. iLO 3 NIC connector
17. NIC 3 connector
18. NIC 4 connector

Features and Benefits

Manage, expand, and protect a single centralized storage system	Consolidate islands of direct-attached or network attached storage to one easy-to-use Windows-powered shared storage platform. Since it's versatile unified storage, it can be a file server (or disk-based backup / replication target), an iSCSI target for application/virtual environment storage, or both.
Go from out-of-the-box to sharing storage in minutes, not hours.	The Windows-powered operating system is pre-installed and user storage is easy to provision with HP Automated Storage Manager (ASM), so you can add storage to your network quickly and securely.
Optimized file services for clients	In a Windows (SMB/CIFS) environment, there's no better way to serve files. Windows Storage Server 2008 R2 delivers better file serving performance than standard Windows Server 2008 R2, has exclusive features like Single Instance Storage (SIS) file de-duplication, and supports Volume Shadow Copy Service snapshots. In mixed environments, you get the flexibility of heterogeneous support for additional protocols like NFS, HTTP, FTP, and WebDAV.
Shared storage for servers and virtual machines	NAS isn't just about sharing files any more-it's about sharing information. With the included Microsoft iSCSI Software Target, you can host storage for applications like Microsoft Exchange, Microsoft SQL, Microsoft SharePoint, or Oracle, and you can drive additional consolidation by hosting storage for Microsoft Hyper-V, VMWare, or Xen deployments.
Seamless integration into your Windows environment	It's running Windows, so it integrates natively into your Windows Active Directory (AD) and Distributed File System (DFS) environments, runs your favorite antivirus, backup, and storage management applications, and the Microsoft Management Console (MMC) user interface has a familiar look and feel.
HP ProLiant industry-standard hardware	Relax -- your investment is protected because you're not locked into proprietary platforms. X1000 G2 Network Storage Systems are built on HP ProLiant Server technology and feature Multi-Core Intel® Xeon® processors, support for SATA or SAS internal hot-plug hard drives, and easy external expansion with HP D2000 enclosures.
HP X1000 Automated Storage Manager Software (HP ASM)	Create, migrate, manage, and protect shared storage without the need for storage expertise using HP ASM Software, which is included with all X1000 G2 Network Storage Systems. HP ASM is designed for IT generalists and is like getting a storage expert in the box. It includes tools to quickly and easily migrate and manage file and iSCSI data using automated best practice settings, and you can enable optional data protection features within HP ASM by installing HP Data Protector Express Software, and/or HP StorageWorks Storage Mirroring Software.
Intelligent storage services	Make more efficient use of storage space using the file de-duplicating Single-instance Storage (SIS) feature and enjoy the benefits of other storage-specific tools like Indexed Search, Quotas, File Screening, Storage Reporting, and Distributed File System (DFS) Replication.
Remote and Enterprise manageability	You can manage and troubleshoot from outside the office at both the operating system level (with Remote Desktop or HTTPS) and at the platform level (using Integrated Lights-Out with the included iLO Advanced Pack License). X1000 G2 Network Storage Systems also integrate with HP Systems Insight Manager (HP SIM) and support ProLiant Support Pack.

Standard Features

Operating System Microsoft Windows Storage Server 2008 R2, Standard x64 Edition

- 64-bit processing (compatible with 32-bit applications)
- Optimized for File Serving: Better file serving performance out of the box than a general-purpose Windows Server 2008 R2 installation on the same hardware.
- HP-enhanced File Server Management Console: Features the familiar look and feel of the Microsoft Management Console (MMC).
- HP Initial Configuration Task Tool: Simplifies and accelerates new device deployment by presenting basic system settings on your first boot.
- Single-instance Storage (SIS): Recovers up to 40% of disk space by de-duplicating files and reducing the amount of redundant data stored (based on Microsoft internal testing). Identifies duplicate files, stores a single copy of the file in a central repository, and replaces the files with pointers to the file in the SIS common store.
- Search Enhancements: Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access that information through the Search function for computers running Windows 2000, Windows XP or Windows Vista.
- File Server Resource Manager (FSRM): Provides both on-demand and scheduled reports detailing storage use, allows administrators to create and manage folder and volume quotas, and permits both name-based screening of files and allowing/disallowing file creation on specified folder trees.
- File Classification Infrastructure: provides insight into your data to help you manage your data more effectively, reduce costs and mitigate risks by providing a built-in solution for file classification allowing administrators to automate manual processes with predefined policies based on the data's business value. Also provided is an extensible infrastructure upon which ISVs can build end-to-end solutions that enable organizations to perform advanced classification and data management.
- Distributed File System (DFS) Management Console: Updated DFS namespace failover, failback and prioritization controls.
- Distributed File System Replication (DFS-R): State-based, multi-master replication engine that supports replication scheduling and bandwidth throttling. DFS-R uses a new compression algorithm that efficiently updates files over limited bandwidth networks by replicating only the changes needed to ensure global file consistency.
- Full support of Volume Shadow Copy Service, which creates point-in-time copies of files and folders at predetermined time intervals that can then be accessed from client computers.
- Unlimited Client Access Licenses (CALs) included
- Microsoft Services for Network File System (NFS)
- Simultaneous support for multiple file serving protocols, including SMB/CIFS, NFS, HTTP, FTP, and WebDAV
- Print Management Console: Manage multiple printers (license for unlimited printer support) from a single console, whether locally or over the WAN
- Support for any number of SATA or SAS drives and multiple network ports
- Support for up to 32GB of SDRAM
- For more information on Windows Storage Server 2008 R2 see: http://www.microsoft.com/windowsserver2008/en/us/wss08.aspx

Windows Storage Server Roles	X1000 G2	X3000 G2
Active Directory Certificate Services	No	No
Actice Directory Domain Services	No	No
Active Directory Federation Services	No	No
Active Directory Lightweight Directory Services	Allowed	Allowed
Active Directory Management Services	No	No
Application Server	No	No
DHCP Server	Allowed	Allowed
DNS Server	No	No
FAX Server	Enabled	Enabled
File Services	Enabled	Enabled
Hyper-V	No	No
Network Policy and Access Services	No	No
Print Services	Enabled	Enabled
Terminal Services	No	No
UDDI Services	No	No
Web Server (IIS)	Enabled	Enabled
Windows Deployment Services	No	No

Microsoft iSCSI Software Target

Microsoft iSCSI Software Target v3.3

- Microsoft iSCSI Software Target versions 3.3 is interoperable with iSCSI initiators that comply with the standard iSCSI protocol. Microsoft iSCSI Software target version 3.3 supports the following iSCSI initiators:
  - Microsoft iSCSI Software Initiator 2.07 and 2.08 in Windows Server 2003.
  - Microsoft iSCSI Software Initiator in Windows Server 2008 SP1 and SP2.
  - Microsoft iSCSI Software Initiator in Windows Server 2008 R2.
  - Microsoft iSCSI Software Initiator in Windows Vista.
  - Microsoft iSCSI Software Initiator in Windows 7.
  - Qlogic initiator QLE4062C-SP, firmware 3.00.01.24.
  - RedHat Enterprise Linux iSCSI Initiator version 5.x.
  - SuSE Enterprise Linux iSCSI Initiator version 10.x.

Support

HP is the customer's primary contact for the resolution of all iSCSI initiator/iSCSI target interoperability issues. Microsoft is committed to working with HP to resolve interoperability issues involving the Microsoft iSCSI Software Target, but Microsoft is not responsible for resolving any issues caused by non-Microsoft iSCSI initiators.

- IETF-ratified iSCSI specification compliant
- IPv6 support (note: HP ASM does not support IPv6)
- iSNS integration
- IPSec encryption
- CHAP authentication
- Seamless integration into Microsoft Management Console (MMC) user interface

Standard Features

- LUN resizing
- IP Take-Over support
- Multi-Path I/O (MPIO) support
- Application-aware snapshots with Microsoft Volume Shadow Copy Service (VSS)
  NOTE: Limit of 512 snapshots per independent iSCSI/Application volume and 64 snapshots for file share volumes. If iSCSI LUNs and file shares are on a common volume the iSCSI snapshot limit is 448.
- Compatible with backup applications certified with Microsoft Windows Server 2008 and Window Server 2008 R2
- Sample Application Server Compatibility: Microsoft Exchange 2000, 2003, and 2007 Servers; Microsoft SQL Server 2000, 2005, and 2008
- Sample Virtual Environment Compatibility: Microsoft Hyper-V, VMWare, Xen

---

HP X1000 Automated Storage Manager (HP ASM) Software

This easy-to-use, integrated storage management tool works from an application point-of-view and can help you orchestrate the many aspects of your storage environment---even if you lack storage expertise. It's like having your own storage expert in the box.

- File Share creation wizard for CIFS or NFS shares with storage allocation, directory quota management, and scheduled snapshots.
- Quota monitoring and alerting per share or application.
- Remote management via Microsoft Internet Explorer or Terminal Services
- Best practice and advanced dialog improvements to ASM wizards grant more control to those with more storage management experience
- Support for setup and management of both internal storage as well as supported direct attached D2000 storage enclosures
- Supports management of tiered storage environments where both SAS and SATA hard drives are attached to externally-attached HP StorageWorks D2000 enclosures.
- You can use ASM to specify a dedicated, primary network--plus a secondary subnet--for your IP-based storage traffic
- Disaster recovery tools work in concert with backup applications to preserve storage subsystem settings in case they need restored after a system rebuild
- Provides end-to-end management and provisioning of iSCSI storage for non-clustered 32-bit and 64-bit Windows Server 2003 or Windows Server 2008 and 2008 R2 hosts (including derivatives like Windows Small Business Server 2008 and Windows Essential Business Server 2008) from the iSCSI Target all the way through to the host
- Provides management and provisioning of iSCSI storage for standards-compliant non-Windows iSCSI initiators such as VMWare, Linux, etc.
- Application data hosting and migration wizard using HP and Microsoft 'Best Practice' storage provisioning for Microsoft Exchange 2003/2007 Storage Groups and Microsoft SQL Server 2000/2005/2008* databases (*SQL Server 2008 support requires installation of "SQL Server 2005 Backward Compatibility" option; file stream functionality not supported).
- Application-level capacity provisioning and online growth for shares, SQL Server and Exchange. SQL Server support includes data file and log directory provisioning and Exchange support includes Mailstore, Publicstore and log directory provisioning.
- Application data hosting and iSCSI Setup wizard for other 'User Defined' Application (Oracle, mySQL, VMware ESX, etc…)
- Data protection policy assignment (snapshots, backup, and HP StorageWorks Storage Mirroring replication) integrated into application migration and share creation wizards for data hosted on the system. (Requires HP Data Protector Express Software and/or HP StorageWorks Storage Mirroring Software)
- Data Protector Express Virtual Library (D2D) device provisioning and space management as well

as support for Data Protector Express D2D2Any add-on option. (Requires HP Data Protector Express Software)

- Integration with HP StorageWorks Storage Mirroring Software to accommodate asynchronous replication of file and block data to another system. (Requires HP StorageWorks Storage Mirroring Software)
- ASM agents now support domain servers (including Windows Server 2008, Small Business Server 2003 and Small Business Server 2008) as application host machines

HP ASM Agent Application & OS Support Matrix

	Microsoft Windows Server 2003 SP1	Microsoft Windows Small Business Server 2003	Microsoft Windows Server 2008 and 2008 R2	Microsoft Windows Essential Business Server 2008
Microsoft Exchange 2003 SP1	o	o		
Microsoft Exchange 2007	o*	o*	o*	o*
Microsoft SQL Server 2000 SP4	o	o		
Microsoft SQL Server 2005 SP2	o	o	o	o
Microsoft SQL Server 2008	o**	o**	o**	o**

* Exchange 2007 is only supported on 64-bit Operating Systems
** SQL Server 2008 support requires installation of "SQL Server 2005 Backward Compatibility" option; file stream functionality not supported

HP ASM Feature Support Matrix

	Microsoft Windows Server 2003 SP1	Microsoft Windows Small Business Server 2003	Microsoft Windows Server 2008	Microsoft Windows Essential Business Server 2008
Data Migration	o	o	o	o
Replication (HP Storage Mirroring Software)	o	o	o	o
Backup (HP Data Protector Express Software)	o	o	o	o
Virtual Library (HP Data Protector Express Software)	o	o	o ***	o ***
Application-aware snapshots	o	o	o	o

*** Utilizing Virtual Library (D2D) functionality requires HP Data Protector Express Software v4.x to support Windows Server 2008

Standard Features

Management

Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS)

Remote system management via Remote Desktop or Telnet

HP ProLiant Onboard Administrator (powered by the Integrated Lights-Out management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration. It functions without additional software, and can be accessed from any location via a web browser.

Capabilities of the HP ProLiant Onboard Administrator include:

- Rom-based Setup Utility (RBSU) and Option Rom Configuration for Arrays (ORCA)
- IML and iLO event logging
- Automatic Server Recovery (ASR)
- OS independent hardware health status
- Present server power consumption
- Virtual Unit ID control
- Remote serial console
- Virtual power button control
- Dynamic Sector Repairing (with Smart Array controller)
- Drive Parameter Tracking (with Smart Array controller)
- Hot Spare Boot
- Advanced license (standard): Virtual KVM remote graphical console, power management capabilities such as power measurement, regulation, and capping, new iLO Text Console, automatic and on-demand video recording of server events, global team collaboration for up to four remote users, virtual media (floppy, CD/DVD, USB key), virtual folders, and enterprise security (directory services and two-factor authentication).

For additional information, please see: www.hp.com/go/iLO

Processor / Cache Memory

X1400 G2	X1500 G2	X1600 G2	X1800 G2
Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)	Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)	Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Chipset

Intel® 5500 Chipset

Memory

Type: DDR3 Registered (RDIMM) standard

Maximum (by O/S license): 32 GB

	X1400 G2	X1500 G2	X1600 G2	X1800 G2
Standard	4GB (2 x 2GB)	4GB (2x 2GB)	6GB (3 x 2GB)	6GB (3 x 2GB)
DIMM Sockets	9	18	12	18

Standard Features

Network Controller		X1400 G2	X1500 G2	X1600 G2	X1800 G2
	NIC Ports	2	2	2	4
	Controller	HP NC326i Integrated Dual Port Gigabit Server Adapter	HP NC326i Integrated Dual Port Gigabit Server Adapter	HP NC362i Integrated Dual Port Gigabit Server Adapter	2 x HP NC382i Integrated Dual Port Multifunction Gigabit Server Adapters with TCP/IP Offload Engine

Expansion Slots		Slot Number	Bus Speed	Connector Width	Bus Number*	Form Factor	Notes
	X1400 G2	4	x16 PCI-Express	x16	21	Full length, full height	
		5	x4 PCI-Express	x8	10	Half length, half height	Occupied by Smart Array controller
	X1500 G2	3	X1 PCI Express Gen 2	x8	7	Full length, full height	
		4	X16 PCI Express Gen 2	x16	13	Full length, full height	
		5	X4 PCI Express Gen 2	x8	10	Full length, full height	Occupied by Smart Array controller
		6	X4 PCI Express Gen 2	x8	4	Full length, full height	
	X1600 G2 (LFF front drive slots)	1	x16 PCI-Express	x8	6	Half length, half height	
		3	x8 PCI-Express	x4	5	Full length, full height	Occupied by Smart Array controller
	X1600 G2 (SFF front drive slots)	1	x16 PCI-Express	x8	1	Half length, half height	
		2	x8 PCI-Express	x4	5	Full Length, full height	Occupied by Smart Array controller
		3	x8 PCI-Express	x4	4	Full Length, full height	

Standard Features

		4	x4 PCI-Express	x4	3	Full length, full height	
	X1800 G2	1	x8 PCI-Express	x16	7	Full Length, full height	
		2	x4 PCI-Express	x8	10	Half Length, full height	
		3	x4 PCI-Express	x8	13	Half Length, full height	Occupied by SAS Expander
		4	x8 PCI-Express	x16	16	Full length, full height	Occupied by Smart Array Controller
		5	x4 PCI-Express	x8	20	Half length, half height	
		6	x4 PCI-Express	x8	23	Half length, half height	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.

Storage Controller		X1400 G2	X1500 G2	X1600 G2	X1800 G2
	Controller(s)	HP Smart Array P212/256MB Controller with battery-backed write cache (BBWC)	HP Smart Array P410/256MB Controller with BBWC	HP Smart Array P212/512MB Controller with BBWC (LFF front drive slots) HP Smart Array P812/1GB Controller with Flash backed write cache (FBWC) - (SFF front drive slots)	HP Smart Array P812/1GB Controller with Flash backed write cache (FBWC)
	RAID	0/1/1+0/5/5+0 6/6+0	0/1/1+0/5/5+0 6/6+0	0/1/1+0/5/5+0 6/6+0	0/1/1+0/5/5+0 6/6+0
	Internal SAS connectors	1	2	1 (LFF) 2 (SFF)	2
	External SAS connectors	1	0	1 (LFF) 4 (SFF)	4

NOTE: Smart Array Advanced Pack License (516471-B21) is included to enable RAID 6, 6+0.

Standard Features

Storage	Hard Drives	X1400 G2	X1500 G2	X1600 G2	X1800 G2
	Internal	Four 3.5" (Large Form Factor) hot-plug bays	Eight 3.5"(Large Form Factor) hot-plug bays	Twelve 3.5" (Large Form Factor) hot-plug bays in front and, two (Small Form Factor) hot-plugs bays in rear or 25 2.5"(Small Form Factor) hot-plug bays in front (no rear drives) See specific model information on which product is 12LFF or 25 SFF	Sixteen 2.5" (Small Form Factor) hot-plug bays
	External	Support for P2000, D2000, and MDS600	Support for P2000, D2000 and MDS600	Support for , P2000,D2000, and MDS600	Support for P2000, D2000 and MDS600
	Optical Drive	X1400 G2,DVD-RW, X1500 G2, DVD-ROM No internal DVD on X1600 G2 and X1800 G2 models			

Maximum Storage Capacity (raw)		X1400 G2	X1500 G2	X1600 G2 (LFF)	X1600 G2 (SFF)	X1800 G2
	Internal SATA	8TB	16TB	24TB(LFF)*	11.5TB(SFF)*	7TB*
	Internal SAS	8TB	16TB	24TB(LFF)*	13.8TB(SFF)*	8.4TB*
	Internal plus External	324TB (8TB internal on P212 + 100TB external on P212 + 216TB external on additional P812)	848TB (16TB internal on P410 + 184TB external on P410 + 648TB external on three additional P812s)	304B* (24TB internal on P212 + 80TB external on P212 + 200TB external on additional P411) * Two SFF drives in rear slots of unit with pre-installed OS not included in capacity totals	811.8TB* (13.8TB internal on P812 + 166TB external on P812 + 200TB external on additional P411+ 432TB external on two additional P812s) *Two SFF drives in front slots of unit with pre-	1.006 PB* (8.4 TB internal on P812 + 166TB external on P812 + 400TB external on two additional P411s + 432TB on two additional P812s) *Two SFF drives in front slots of

Standard Features

			installed OS not included in capacity totals	unit with pre-installed OS not included in capacity totals
Power Supply	X1400 G2 500 Watts, Non Hot Plug	X1500 G2 750 Watts, Hot Plug (optional redundant)	X1600 G2 750 Watts, Hot Plug Redundant	X1800 G2 750 Watts, Hot Plug Redundant
Power Cords	X1400 G2 One high voltage power cord (IEC C13 to C14) standard	X1500 G2 Regional or country specifc power cord required	X1600 G2 Two high voltage power cords (IEC C13 to C14) standard	X1800 G2 Two high voltage power cords (IEC C13 to C14) standard
	NOTE: X1400 G2, X1600 G2, X1800 G2 Network Storage Systems are primarily connected to PDUs in racks, so they ship standard with only PDU C-14 to C13 power cord(s). However, you may alternatively plug an X1000 G2 Network Storage System into a wall receptacle by ordering a separate power cord. For the X1500, a regional or country specific power cord option must be ordered with the product. (see power cord options section for more information).			
System Fans	X1400 G2 Non-hot plug, Non-redundant	X1500 G2 Non-hot plug, (optional redundant)	X1600 G2 Non-hot plug, redundant	X1800 G2 Fully redundant hot plug (N+1)
Form Factor	X1400 G2 Rack Mount (1U), (1.75 in/4.45 cm)	X1500 G2 Tower (5U)	X1600 G2 Rack Mount (2U), (3.5 in/8.89 cm)	X1800 G2 Rack Mount (2U), (3.5 in/8.89 cm)

Rack Airflow Requirements

Rack 10000 series Cabinets

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl145/index.html

Telco and Threaded Hole Rack Support	Telco Rack Kit: NOTE: Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp

Optional Software

HP StorageWorks Storage Mirroring Software

HP StorageWorks Storage Mirroring offers a host-based application that performs remote copy over an IP LAN/WAN. Key features include asynchronous replication that can be scheduled to a fine granular level, Logical Unit Number (LUN), file or byte level. Other features include multiple replication configuration options including peer-to-peer and many-to-one. In addition, Storage Mirroring is a very cost effective disaster recovery alternative from one host to another within a LAN, storage center, or between direct attached storage in metro offices and regional centers. Additional configurations allow replication from small office environments to ensure business continuity without an outside IT staff. Installing HP Storage Mirroring on an HP X1000 Network Storage System enables replication features within HP X1000 G2 Automated Storage Manager Software (HP ASM), including streamlined setup of near real-time replication of file shares or application stores to a remote target. See: http://www.hp.com/go/simplestorage for more information.

For more information on HP Storage Mirroring Software:
http://h18006.www1.hp.com/products/storage/software/sm/

HP Data Protector Express Software

HP Data Protector Express is easy-to-use data protection and disaster recovery software. It is designed for smaller environments where ease of installation, use, and installation are needed. It enables backup to disk and/or tape of data stored on an X1000 G2 Network Storage System and disaster recovery in the event of a serious incident. An X1000 G2 Network Storage System can also act as the Backup Server and as a target for backup of data on other LAN connected machines or data protection can be integrated into an existing Data Protector Express installation.

Installing HP Data Protector Express on an HP X1000 G2 Network Storage System enables data protection features within HP X1000 Automated Storage Manager Software (HP ASM), including backup of file shares or application stores using application-aware snapshots to tape, disk, or other removable media targets. See: http://www.hp.com/go/simplestorage for more information.

For more information on HP Data Protector Express Software:
http://www.hp.com/go/dataprotectorexpress

HP Data Protector Software

HP Data Protector Software is enterprise data protection and disaster recovery, ensuring recovery from any disruption. Data Protector integrates a variety of techniques to eliminate backup and recovery windows. The capabilities to eliminate planned downtime range from online backup and backup of open files to zero-downtime, zero-impact backup. The software provides industry-leading instant recovery as well as several disaster recovery alternatives to eliminate unplanned downtime, allowing recovery of entire data centers in minutes.

Data Protector is enabling organizations to reduce costs by automating routine tasks to maximize the effectiveness of the data protection staff. For the price of an entry-level product, it provides the enterprise functionality customers need. Data Protector scales from single server to distributed enterprise, covering an extensive range of heterogeneous applications, operating environments and storage configurations with a single solution.

All HP X1000 G2 Network Storage Systems support using Data Protector as a backup software solution.

For more information on HP Data Protector:
http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html

---

Optional Software

HP Storage Essentials NAS Manager Software	Provides comprehensive Network Attached Storage (NAS) management capabilities for X1000 Network Storage Systems. Visualize your distributed HP NAS solutions and centrally manage their capacity, performance, events, and dependencies to ensure NAS availability and performance and unify SAN and NAS management. For more information go to: Storage Essentials - NAS Manager

Models Pre-configured

These models come with factory-selected drives and the Microsoft Windows Storage Server 2008 R2, Standard Edition operating system pre-installed

Choose a Pre-configured Model

NOTE: All options ship separately and are not factory integrated
NOTE: Model names are based on raw storage capacity, not available user storage.

HP X1000 G2 Network Storage Systems

Common Specifications	Operating System	Microsoft® Windows Storage Server 2008 R2 Standard x64 Edition with Microsoft iSCSI Software Target and HP X1000 Automated Storage Manager Software
	Optical Drive	For QuickRestore disaster recovery on X1400 G2 a DVD-RW is included. X1500 G2 models include a DVD-ROM. X1600 G2 and X1800 G2 models do not ship with an optical drive. A USB 2.0 compatible external DVD reader must be used for Quick Restore recovery. Any USB 2.0 compatible DVD reader will work or customers may purchase the HP dvd556s 8X USB Powered Slim Multiformat DVD Writer separately.
	Management	Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS)
	Remote Access	HP ProLiant Integrated Lights-Out with Advanced Pack license; Telnet; Remote Desktop

X1400 G2 Models

Common Specifications	Processor	Intel® Xeon® Processor E5503 2.00 GHz; 1 standard
	Memory	4GB (2 x 2GB)
	Storage Controller	Smart Array P212 with 256MB of BBWC Controller with 1 internal SAS port for internal drives and 1 external SAS port for expansion
	Internal Drive Support	Standard four 3.5" (Large Form Factor) hot-plug SATA or SAS hard drives
	Network Ports	2 x Gigabit Ethernet
	Expansion Slots	2 x PCIe (one slot occupied by Smart Array Controller)
	Form Factor	1U Rack

HP StorageWorks X1400 G2 4TB SATA Network Storage System BV854A
Internal Storage: 4 x 1TB SATA 7.2K 3.5" MDL hot-plug HDDs -Drives factory configured as RAID 5 with OS pre-installed

HP StorageWorks X1400 G2 8TB SATA Network Storage System BV855A
Internal Storage: 4 x 2TB SATA 7.2K 3.5" MDL hot-plug HDDs - Drives factory configured as RAID 5 with OS pre-installed

Models Pre-configured

X1500 G2 Models

Common Specifications	Processor	Intel® Xeon® Processor E5503 2.00 GHz; 1 standard, up to 2 supported
	Memory	4GB (2 x 2GB)
	Storage Controller	Smart Array P410 with 256MB of BBWC Controller with 2 internal SAS port s for internal drives, no external SAS port
	Internal Drive Support	Standard eight 3.5" (Large Form Factor) hot-plug SATA or SAS hard drives
	Network Ports	2 x Gigabit Ethernet
	Expansion Slots	4 x PCIe (one slot occupied by Smart Array Controller)
	Form Factor	5U Tower

HP StorageWorks X1500 G2 4TB SATA Network Storage System BV857A
Internal Storage: 4 x 1TB SATA 7.2K 3.5" MDL hot-plug HDDs - Drives factory configured as RAID 5 with OS pre-installed
NOTE: Up to 4 additional internal LFF HDDs supported in open slots.

HP StorageWorks X1500 G2 8TB SATA Network Storage System BV858A
Internal Storage: 4 x 2TB SATA 7.2K 3.5" MDL hot-plug HDDs - Drives factory configured as RAID 5 with OS pre-installed
NOTE: Up to 4 additional internal LFF HDDs supported in open slots.

NOTE: A regional or country specific power cord option must be ordered with X1500. See power cord options section.

X1600 G2 Models

Common Specifications	Processor	Intel® Xeon® Processor E5520 2.26 GHz; 1 standard, up to 2 supported
	Memory	6GB (3 x 2GB)
	Storage Controller	Smart Array P212 with 512MB BBWC Controller with 1 internal SAS port for internal drives and 1 external SAS port for expansion (LFF front slot models) Smart Array P812 with 1GBB FBWC Controller with 2 internal SAS ports for internal drives and 4 external SAS ports for expansion (SFF front slot models)
	Internal Drive Support	Four models with front twelve (12) 3.5" Large Form Factor (LFF) hot-plug drive bays supporting SAS or SATA and rear two (2) 2.5" Small Form Factor (SFF) hot-plug drive bays Two models with twenty five (25) 2.5" Small Form Factor (SFF) hot-plug drive bays supporting SAS or SATA
	Network Ports	2 x Gigabit Ethernet
	Expansion Slots	2 x PCIe (one slot occupied by Smart Array Controller) - LFF front slot models 4 x PCIe (one slot occupied by Smart Array Controller) - SFF front slot models
	Redundancy	Hot plug redundant power supply
	Form Factor	2U Rack

Models Pre-configured

HP StorageWorks X1600 G2 Network Storage System BV859A
Internal Storage: 2 x146GB 6G 15K 2.5" SAS DP ENT hot-plug HDDs in rear drive slots factory configured as RAID 1with pre-installed OS
NOTE: up to 12 additional internal LFF HDDs supported in open front slots

HP StorageWorks X1600 G2 6TB SATA Network Storage System BV860A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in rear drive slots factory configured as RAID 1 with pre-installed OS
Internal Storage: 6 x 1TB SATA 7.2K 3.5" MDL hot-plug HDDs in front drive slots
NOTE: Up to 6 additional internal LFF HDDs supported in open front slots.

HP StorageWorks X1600 G2 6TB SATA China Network Storage System BV860AC
NOTE: For sale in China only version of the above sku

HP StorageWorks X1600 G2 12TB SATA Network Storage System BV861A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in rear drive slots factory configured as RAID 1 with pre-installed OS
Internal Storage: 6x 2TB SATA 7.2K 3.5" MDL hot-plug HDDs in front drive slots

HP StorageWorks X1600 G2 12TB SATA China Network Storage System BV861AC
NOTE: For sale in China only version of the above sku

HP StorageWorks X1600 G2 24TB SATA Network Storage System BV862A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in rear drive slots factory configured as RAID1 with pre-installed OS
Internal Storage: 12 x 2TB SATA 7.2K 3.5" MDL hot-plug HDDs in front drive slots

HP StorageWorks X1600 G2 24TB SATA China Network Storage System BV862AC
NOTE: For sale in China only version of the above sku

HP StorageWorks X1600 G2 6TB SAS Network Storage System BV864A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in front drive slots factory configured as RAID 1 with pre-installed OS
Internal Storage: 10 x 600GB 6G SAS 10K 2.5" DP ENT hot-plug HDDs in front drive slots
NOTE: Up to 13 additional internal SFF HDDs supported in open front slots.

HP StorageWorks X1600 G2 6TB SAS China Network Storage System BV864AC
NOTE: For sale in China only version of the above sku

HP StorageWorks X1600 G2 13.8TB SAS Network Storage System BV866A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in front drive slots factory configured as RAID1 with pre-installed OS
Internal Storage: 23 x 600GB 6G SAS 10K 2.5" DP ENT hot-plug HDDs in front drive slots

HP StorageWorks X1600 G2 13.8TB SAS China Network Storage System BV866AC
NOTE: For sale in China only version of the above sku

Models Pre-configured

X1800 G2 Models

Common Specifications	Processor	Intel® Xeon® Processor E5640 2.66 GHz; 1 standard, up to 2 supported
	Memory	6GB (3 x 2GB)
	Storage Controller	Embedded Smart Array P812 with 1GB FBWC Controller with 2 internal SAS ports for internal drives plus integrated Smart Array Controller with 4 external SAS ports for expansion
	Internal Drive Support	Sixteen (16) 2.5" Small Form Factor (SFF) hot-plug drive bays supporting SAS or SATA
	Network Ports	4 x Gigabit Ethernet
	Expansion Slots	6 x PCIe (one slot occupied by Smart Array Controller and one slot occupied by SAS expander)
	Redundancy	Hot plug redundant power supply and fully redundant (N+1) hot plug fans
	Form Factor	2U Rack

HP StorageWorks X1800 G2 Network Storage System BV868A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in front drive slots factory configured as RAID1 with pre-installed OS
NOTE: Up to 14 additional internal SFF drives supported in open front slots.

HP StorageWorks X1800 G2 4.8TB SAS Network Storage System BV869A
Internal Storage: 2 x146GB 6G 15K 2.5" DP ENT hot-plug HDDs in front drive slots factory configured as RAID1 with pre-installed OS
Internal Storage: 8 x 600GB 6G SAS 10K SFF DP hot-plug HDDs
NOTE: Up to 6 additional internal SFF drives supported in open front slots.

Models (Drives Configure-to-Order)

These models come with zero drives standard and allow you to select drive quantity, type, and capacity to be integrated at the factory.

Choose a Base Model, then Select Hard Drives

NOTE: You must select a minimum number of drives with each Base model to accommodate factory installation of the Microsoft Windows Storage Server 2008 R2 operating system. All drives must be of the same type and a capacity greater than 146GB
NOTE: Options (other than drives selected as part of the configure-to-order process) ship separately and are not factory integrated.

HP X1000 G2 Network Storage Systems (Base models)

Common Specifications	Operating System	Microsoft Windows Storage Server 2008 R2, Standard x64 Edition with Microsoft iSCSI Software Target and HP X1000 Automated Storage Manager Software
	Optical Drive	For QuickRestore disaster recovery on X1400 G2 a DVD-RW is included. X1500 G2 models include a DVD-ROM . X1600 G2 and X1800 G2 models do not ship with an optical drive. A USB 2.0 compatible external DVD reader must be used for Quick Restore recovery. Any USB 2.0 compatible DVD reader will work or customers may purchase the HP dvd556s 8X USB Powered Slim Multiformat DVD Writer separately.
	Management	Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS)
	Remote Access	HP ProLiant Integrated Lights-Out with Advanced Pack license; Telnet; Remote Desktop
	Factory Racking	The factory can integrate select X1000 G2 Network Storage Systems with other HP products such as HP ProLiant Servers, P2000/D2000 arrays, or Enterprise Virtual Arrays. NOTE: #0D1 will appear after the part number on the sales order if HP factory integration is supported.

X1400 G2 Network Storage System

BV853A

NOTE: This model does not include pre-configured HDDs. HDDs must be selected as a Factory Integrated Option (FIO) from the list below. For BV853A, a minimum of 4 HDDs of the same type and a capacity greater than 146GB must be ordered for integration. BV853A cannot be ordered/shipped with less than 4 HDDs. The four drives will be factory configured as RAID 5 with the OS pre-installed.

Models (Drives Configure-to-Order)

Specifications	Processor	Intel® Xeon® Processor E5503 2.00 GHz; 1 standard	
	Memory	4GB (1 x 2GB)	
	Storage Controller	Smart Array P212 with 256 MB BBWC Controller with 1 internal SAS port for internal drives and 1 external SAS port for expansion	
	Internal Drive Support	Standard four 3.5" (Large Form Factor) hot-plug SATA or SAS hard drives	
	Network Ports	2 x Gigabit Ethernet	
	Expansion Slots	2 x PCIe (one slot occupied by Smart Array Controller)	
	Form Factor	1U Rack	
Drive Options	Minimum Number of Drives Required	4	
	Maximum Number of Drives Allowed	4	
	SAS Enterprise (ENT) and Midline (MDL) Drives 3.5", Hot Plug		
	HP 600GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		516828-B21
	HP 450GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		516816-B21
	HP 450GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		454232-B21
	HP 300GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		516814-B21
	HP 300GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		416127-B21
	HP 146GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		384854-B21
	HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		507616-B21
	HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		507614-B21
	HP 1TB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		461137-B21
	HP 750GB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		461135-B21
	SATA Midline (MDL) and Entry (ETY) Drives 3.5", Hot Plug		
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive		507632-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive		454146-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive		458928-B21
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive		571230-B21
	HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive		458945-B21
	SATA Hot Plug 3.5" Midline (MDL) Solid State Drives		
	HP 120GB 3G SATA 3.5in MDL 1y Wty SSD		570763-B21

X1500 G2 Network Storage System

BV856A

NOTE: This model does not include pre-configured HDDs. HDDs must be selected as a Factory Integrated Option (FIO) from the list below. For BV856A, a minimum of 2 HDDs of the same type and capacity greater than 146GB must be ordered for integration. BV856A cannot be ordered/shipped with less than 2 HDDs. The two drives will be factory configured as RAID 1 with the OS pre-installed.

NOTE: A country specific power cord option must be ordered with X1500. See power cord options section.

Models (Drives Configure-to-Order)

Specifications	Processor	Intel® Xeon® Processor E5503 2.00 GHz; 1 standard	
	Memory	4GB (2 x 2GB)	
	Storage Controller	Smart Array Controller P410 with 256MB BBWC with 2 internal SAS port for internal drives, no external SAS ports	
	Internal Drive Support	Standard eight 3.5" (Large Form Factor) hot-plug SATA or SAS hard drives	
	Network Ports	2 x Gigabit Ethernet (1 shared with iLO2)	
	Expansion Slots	2 x PCIe	
	Form Factor	1U Rack	
Drive Options	Minimum Number of Drives Required	2	
	Maximum Number of Drives Allowed	8	
	SAS Enterprise (ENT) and Midline (MDL) Drives 3.5", Hot Plug		
	HP 600GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		516828-B21
	HP 450GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		516816-B21
	HP 450GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		454232-B21
	HP 300GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		516814-B21
	HP 300GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		416127-B21
	HP 146GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive		384854-B21
	HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		507616-B21
	HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		507614-B21
	HP 1TB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		461137-B21
	HP 750GB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive		461135-B21
	SATA Midline (MDL) and Entry (ETY) Drives 3.5", Hot Plug		
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive		507632-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive		454146-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive		458928-B21
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive		571230-B21
	HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive		458945-B21
	SATA Hot Plug 3.5" Midline (MDL) Solid State Drives		
	HP 120GB 3G SATA 3.5in MDL 1y Wty SSD		570763-B21

X1600 G2 Network Storage System (LFF) BV859A

NOTE: This model includes two 146GB SFF HDDs in rear of unit factory configured as RAID1 with the OS pre-installed. Up to 12 LFF slots are available in the front for data storage.

Models (Drives Configure-to-Order)

Specifications	Processor	Intel® Xeon® Processor E5520 2.26 GHz; 1 standard, up to 2 supported
	Memory	6GB (3 x 2GB)
	Storage Controller	Embedded Smart Array P212 with 512MB BBWC Controller with 1 internal SAS port for internal drives plus integrated Smart Array Controller with 1 external SAS ports for expansion
	Internal Drive Support	Front twelve (12) 3.5" Large Form Factor (LFF) hot-plug drive bays supporting SAS or SATA and rear two (2) 2.5" Small Form Factor (SFF) hot-plug drive bays
	Network Ports	2 x Gigabit Ethernet
	Expansion Slots	2 x PCIe (one slot occupied by Smart Array Controller)
	Redundancy	Hot plug redundant power supply
	Form Factor	2U Rack
Drive Options	Minimum Number of Drives Required	0
	Maximum Number of Drives Allowed	12
	SAS Enterprise (ENT) and Midline (MDL) Drives 3.5", Hot Plug	
	HP 600GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21
	HP 450GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516816-B21
	HP 450GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	454232-B21
	HP 300GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516814-B21
	HP 300GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	416127-B21
	HP 146GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	384854-B21
	HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507616-B21
	HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507614-B21
	HP 1TB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	461137-B21
	HP 750GB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	461135-B21
	SATA Midline (MDL) and Entry (ETY) Drives 3.5", Hot Plug	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	507632-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	454146-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458928-B21
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	571230-B21
	HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	458945-B21
	SATA Hot Plug 3.5" Midline (MDL) Solid State Drives	
	HP 120GB 3G SATA 3.5in MDL 1y Wty SSD	570763-B21

X1800 G2 Network Storage System

BV868A

NOTE: This model includes two 146GB SFF HDDs factory configured as RAID 1 with the OS pre-installed. Up to 14 SFF slots are available in the front for data storage.

Models (Drives Configure-to-Order)

Specifications	Processor	Intel® Xeon® Processor E5640 2.66 GHz; 1 standard, up to 2 supported
	Memory	6GB (3 x 2GB)
	Storage Controller	Embedded Smart Array P812 with 1GB FBWC Controller with 2 internal SAS ports for internal drives plus integrated Smart Array Controller with 4 external SAS ports for expansion
	Internal Drive Support	Front sixteen (16) 2.5" Small Form Factor (SFF) hot-plug drive bays supporting SAS or SATA
	Network Ports	4 x Gigabit Ethernet
	Expansion Slots	6 x PCIe (one slot occupied by Smart Array Controller and one slot occupied by SAS expander)
	Redundancy	Hot plug redundant power supply and fully redundant (N+1) hot plug fans
	Form Factor	2U Rack
Drive Options	Minimum Number of Drives Required	0
	Maximum Number of Drives Allowed	14
	SAS Enterprise (ENT) and Midline (MDL) Drives 2.5" Drives, Hot Plug	
	HP 600GB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	581286-B21
	HP 300GB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
	HP 146GB 6G SAS 15K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
	HP 146GB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
	HP 72GB 6G SAS 15K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21
	HP 500GB 6G SAS 7.2K rpm SFF (2.5inch) Midline 1yr Warranty Hard Drive	507610-B21
	SATA Hot Plug Midline (MDL and Entry (ETY) Drives	
	HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
	HP 160GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	530888-B21
	HP 250GB 3G SATA 5.4K rpm SFF (2.5-inch) Entry 1yr Warranty Hard Drive	460355-B21
	SATA Hot Plug Midline (MDL) Solid State Drives	
	HP 120GB 3G SATA 2.5in MDL 1y Wty SSD	572073-B21

Options

The following options are available for both pre-configured and drive configure-to-order models
NOTE: Options ship separately and are not factory integrated
NOTE: Carefully match options to your model to ensure compatibility

Add Another Processor

You can add a second processor to X1500 G2, X1600 G2 and X1800 G2 models
NOTE: X1400 G2 models support one processor only.

X1500 G2	Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)	603974-B21
X1600 G2	Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	508342-B21
X1800 G2	Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)	587480-B21

Add More Memory

NOTE: All models are expandable to 32GB (limited by O/S license).
NOTE: Number of available DIMM sockets varies by model.

X1400 G2 / X1500 G2 / X1600 G2 / X1800 G2	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.	604506-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator. NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient NOTE: PC3L is a low voltage memory.	

Options

Add a Network Adapter

NOTE: Expansion slot availability varies by model.
NOTE: Multifunction Server Adapters support the installed Microsoft Windows Server Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features.

X1400 G2 / X1500 G2 / X1600 G2 / X1800 G2	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
	HP NC365T 4-port Ethernet Server Adapter	593722-B21
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	HP NC375T PCI Express Quad Port Gigabit Server Adapter	538696-B21
	HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
	HP NC522SFP Dual Port 10GbE Server Adapter NOTE: A minimum of two gigabyte (2 GB) of server memory is required per each NC522SFP adapter. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	468332-B21
X1400 G2 / X1800 G2	HP NC112T PCIe Gigabit Server Adapter	503746-B21
HP Security - TPM	HP Trusted Platform Module Option Kit	488069-B21

Add More Storage

HP X1000 G2 Network Storage Systems come standard with at least one installed Smart Array Controller that supports internal drives. The Smart Array Controllers in the X1400 G2, X1600 G2 and X1800 G2 also have external ports for expansion to external storage.
NOTE: Expansion slot availability varies by model.
NOTE: For the X1400 G2, adding a second Smart Array controller with BBWC cannot be done as there is no space to accommodate the battery pack for the second SA controller.

X1400 G2 / X1500 G2 / X1600 G2 / X1800 G2	SAS Controllers	
	Smart Array P800 Controller	
	HP Smart Array P800/512MB BBWC Controller	381513-B21
	HP Smart Array P212 Controller	
	HP P212/256 Smart Array Controller	462834-B21
	HP P212/ZM Smart Array Controller	462828-B21
	HP Smart Array P411 Controller	
	HP P411/256 Smart Array Controller	462830-B21
	HP P411/512 BBWC Smart Array Controller	462832-B21
	HP Smart Array P411/512MB Flash Backed Write Cache	578229-B21
	HP Smart Array P411/1G Flash Backed Write Cache	572531-B21
	Smart Array P812 Controller	
	HP Smart Array P812/1G Flash Backed Cache Controller	487204-B21
	Optional Upgrades	

Options

256 MB Cache Module NOTE: Supported on HP Smart Array P212 Controller	462968-B21
512MB Battery-backed write cache	462967-B21
Battery Kit upgrade (for BBWC) NOTE: For X1600 G2, when adding a second SmartArray P212 or P411 Controller and BBWC, a small spacer must be removed from the second battery holder. This is easily accomplished using a flat blade screw driver. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html (Smart Array P212 Controller) http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html (Smart Array P411 Controller) http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller)	462969-B21
SAS HBAs	
HP SC08e 6Gb 2-ports Ext PCIe SAS HBA NOTE: This is a 2 x4 External Port HBA NOTE: This is only approved for the HP StorageWorks P2000 G3 SAS Modular Smart Array. 614988-B21 NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/13651_div/13651_div.html (SC08e 6Gb HBA)	614988-B21
SCSI HBAs	
HP U320e SCSI Host Bus Adapter NOTE: The AH62A is only supported on the X1400 G2 and X1600 G2.	AH627A
HP SC11Xe Host Bus Adapter NOTE: Recommended HBA for SCSI tape drive connect. NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	412911-B21
Fibre Channel HBAs	
NOTE: For more information on Fibre Channel HBAs, see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html.	
Brocade Fibre Channel HBAs	
HP 81B PCIe 8Gb FC Single Port HBA	AP769A
HP 82B PCIe 8Gb FC Dual Port HBA	AP770A
HP 41B PCIe 4Gb FC Single Port HBA	AP767A
HP 42B PCIe 4Gb FC Dual Port HBA	AP768A
Emulex Fibre Channel HBAs	
HP StorageWorks 81E 8Gb SP PCI-e FC HBA	AJ762A
HP StorageWorks 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA	A8003A
QLogic Fibre Channel HBAs	

Options

	HP StorageWorks 81Q PCI-e FC HBA	AK344A
	HP StorageWorks 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
	HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A
X1400 G2 / X1500 G2/ X1800 G2	SAS HBAs	
	HP SC08Ge Host Bus Adapter	488765-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)	
HP StorageWorks D2000 Disk Enclosures	HP StorageWorks D2600 Disk Enclosure	AJ940A
	HP StorageWorks D2700 Disk Enclosure	AJ941A
	HP StorageWorks D2600 w/12 450GB 6G SAS 15K LFF Dual Port HDD 5.4TB Bundle	AW522A
	HP StorageWorks D2600 w/12 600GB 6G SAS 15K LFF Dual Port HDD 7.2TB Bundle	AW523A
	HP StorageWorks D2700 w/25 146GB 6G SAS 15K SFF Dual Port HDD 3.6TB Bundle	AW524A
	HP StorageWorks D2700 w/25 300GB 6G SAS 10K SFF Dual Port HDD 7.5TB Bundle	AW525A
	HP StorageWorks D2700 w/25 500GB 6G SAS 7.2K SFF Dual Port MDL HDD 12.5TB Bundle	AW526A
	NOTE: Please see the following QuickSpecs for Technical Specifications additional D2000 hard drives, controllers, options and cable information: http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html	
MDS600	HP MDS600 with two Dual Port I/O Module System	AJ866A
	HP StorageWorks MDS 600 Dual I/O Module Option Kit	AP763A
	HP StorageWorks MDS 600 with (35) 1TB LFF SATA Hard Disk Drive Bundle	AP764A
	HP StorageWorks MDS 600 with (35) 450GB LFF SAS Hard Disk Drive Bundle	AP765A
	HP StorageWorks MDS 600 with (35) 300GB LFF SAS Hard Disk Drive Bundle	AX670A
	HP StorageWorks MDS600 with (70) 1TB LFF SATA Hard Disk Drive Bundle	AX668A
	HP StorageWorks MDS 600 with (70) 450GB LFF SAS Hard Disk Drive Bundle	AX669A
	HP StorageWorks MDS 600 with (70) 300GB LFF SAS Hard Disk Drive Bundle	AX671A
	NOTE: Please see the following QuickSpecs for Technical Specifications additional MDS600 hard drive, controllers, options and cable information: http://h18000.www1.hp.com/products/quickspecs/13257_div/13257_div.html	
X1400 G2 / X1500 G2 /	HP StorageWorks Modular Smart Array External Enclosures	

Options

X1600 G2 / X1800 G2	HP StorageWorks 60 Modular Smart Array (MSA60) NOTE: Rack-mountable 12 drive (3.5" SAS/SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	418408-B21
	HP StorageWorks MSA60 1.8TB SAS HDD Bundle (MSA60 w/12 146GB 15K SAS LFF HDD)	AG822A
	HP StorageWorks MSA60 9TB SATA HDD Bundle (MSA60 w/12 750GB 15K SATA LFF HDD)	AG823A
	HP StorageWorks MSA60 3.6TB SAS HDD Bundle (MSA60 w/12 300GB 15K SAS LFF HDD)	AG824A
	HP StorageWorks 70 Modular Smart Array (MSA70) NOTE: Rack-mountable 25 drive (2.5" SAS/SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies.	418800-B21
	HP StorageWorks MSA70 1.8TB SAS HDD Bundle (MSA70 w/25 72GB 15K SAS SFF HDD)	AG825A
	HP StorageWorks MSA70 3.6TB SAS HDD Bundle (MSA70 w/25 146GB 10K SAS SFF HDD)	AG893A
	NOTE: Please see the following QuickSpecs for Technical Specifications additional information: http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html (MSA60) http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html (MSA70)	
X1400 G2 / X1500 G2 / X1600 G2 / MSA60	Large Form Factor (LFF) Hard Drives	
	SAS Enterprise (ENT) Drives 3.5", Hot Plug	
	HP 450GB 3G 15K 3.5" DP SAS ENT HDD	454232-B21
	HP 400GB 3G SAS 10K 3.5" DP ENT HDD	459508-B21
	HP 300GB 3G SAS 15K 3.5" DP HDD	416127-B21
	HP 146GB 3G SAS 15K 3.5" DP HDD	384854-B21
	HP 72GB 3G SAS 15K 3.5" DP HDD	384852-B21
	SAS Midline (MDL) DP Drives 3.5", Hot Plug	
	HP 1TB 3G SAS 7.2K 3.5" DP MDL HDD	461137-B21
	HP 750GB 3G SAS 7.2K 3.5" DP MDL HDD	461135-B21
	SATA Midline (MDL) Drives 3.5", Hot Plug	
	HP 2TB 3G SATA 7.2K 3.5" MDL HDD	507632-B21
	HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
	HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
	HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
	HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21
	SATA Entry (ETY) Drives 3.5", Hot Plug	
	HP 160GB 3G SATA 7.2K 3.5" ETY HDD	458945-B21
X1800 G2 / MSA70	Small Form Factor (SFF) Hard Drives	

Options

	SAS Enterprise (ENT) Drives 2.5" Drives, Hot Plug	
	HP 300GB 6G SAS 10K SFF DP ENT HDD	507127-B21
	HP 300GB 3G SAS 10K SFF DP ENT HDD	492620-B21
	HP 146GB 6G SAS 10K SFF DP ENT HDD	507125-B21
	HP 146GB 3G SAS 10K SFF DP ENT HDD	418367-B21
	HP 146GB 3G SAS 15K SFF DP ENT HDD	504062-B21
	HP 72GB 3G SAS 15K SFF DP ENT HDD	418371-B21
	HP 72GB 3G SAS 10K SFF DP ENT HDD	384842-B21
	HP 36GB 3G SAS 15K SFF DP ENT HDD	418369-B21
	NOTE: SAS Enterprise drives have a 3-year warranty. Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)	
	SATA Entry (ETY) Drives 2.5", Hot Plug	
	HP 250GB 3G SATA 5.4K SFF ETY HDD	460355-B21
	HP 120GB 1.5G SATA 5.4K SFF ETY HDD	458924-B21
	NOTE: SATA drives have a 1 year warranty. Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	

Add a Power Supply

The HP X1500 G2 Network Storage Systems comes standard with one 750W power supply. Add a second power supply for redundancy.

X1500 G2	HP 750W Common Slot High Efficiency Power Supply Kit	512327-B21

Add a Power Cord

HP X1000 G2 Network Storage Systems come standard with at least one rack (IEC-IEC) PDU power cord. If you wish to use wall outlet power instead, you can choose a country- or region-specific power cord.

NOTE: A regional or country specific power cord option must be ordered with X1500.

X1400 G2 / X1500 G2/X1600 G2 / X1800 G2	HP 1.83m 10A C13-UL US Power Cord	AF556A
	HP 1.83m 10A C13 China Power Cord	AF557A
	HP 2.5m 10A C13-Argentina Power Cord	AF558A
	HP 1.83m 10A C13 Brazil Power Cord	AF559A
	HP 1.83m 10A C13 Korea Power Cord	AF560A
	HP 1.83m 10A C13 Taiwan Power Cord	AF561A
	HP 2.0m 10A C13 India Power Cord	AF562A
	HP 2.5m C13 AU/NZ Power Cord	AF569A
	HP 1.83m 10A C13 CH Power Cord	AF565A
	HP 1.83m 10A C13 DK Power Cord	AF566A
	HP 1.83m 10A C13 EU Power Cord	AF568A
	HP 1.83m 10A C13 IL Power Cord	AF564A

Options

HP 1.83m C13 IT/CL Power Cord	AF571A
HP 2m C13 Japan Power Cord	AF572A
HP 1.83m 10A C13 UK Power Cord	AF570A
HP 2.5m C13 ZA/IN Power Cord	AF567A
HP 1.83m 10A C13 NBR14136 Brazil Power Cord	AF591A

Add Optional Software

X1400 G2 / X1500 G2 / X1600 G2 / X1800 G2

HP Data Protector Express Software

Data Protector Express is simple yet powerful backup and recovery software. It makes it easy to protect your X1000 G2 Network Storage System and the data stored on it.

The base product is the Data Protector Express Backup Server. Installing this creates the Data Protector Express Storage Domain and enables data protection features within HP ASM, including backup of file shares or application stores using application-aware snapshots to tape, disk, or other removable media target. See http://www.hp.com/go/simplestorage for more information.

HP Data Protector Express 4.0 Backup Server (base product)	BB117BA

HP Data Protector Express Software Options

Data Protector Express is a modular software product. Option licenses are installed to add additional features and protect additional machines.

HP Data Protector Express 4.0 Network Server Agent Used to add an additional machine to the Data Protector Express Storage Domain for backup. Or, is used to add an X1000 G2 Network Storage System to an existing Data Protector Express Storage Domain.	BB121BA
HP Data Protector Express 4.0 Network Server Agent 3 pack	BB122BA
HP Data Protector Express 4.0 Application Online Agent Enables online protection for Microsoft Exchange Servers and Microsoft SQL Servers. One LTU needed per machine for each application protected.	BB125BA
HP Data Protector Express 4.0 Bare Metal Disaster Recovery Option Add disaster recovery protection to your X1000 G2 Network Storage System or other machine in the Data Protector Express Storage Domain to get productive again quickly after a disaster or failure. One LTU per machine that requires automated disaster recovery.	BB128BA
HP Data Protector Express 4.0 D2Any2Any Option Enable multi-tier backup between different media types. Automate the movement of backed up data from backup media to tertiary media for longer term retention and additional protection. Enables the X1000 G2 Network Storage System to be a disk backup target with automatic, policy-driven movement of backup data X1000 G2 Network Storage System disk to tape.	BB130BA
HP Data Protector Express 4.0 Drive Expansion Option Adds support for multi-drive tape libraries, virtual tape libraries and Data Protector Express Virtual Libraries. One license required for each drive in excess of one per tape library, virtual tape library or Virtual Library.	BB133BA

NOTE: For more information on HP Data Protector Express Software: http://www.hp.com/go/dataprotectorexpress

X1400 G2 / X1500 G2 / X1600 G2 / X1800 G2	HP StorageWorks Storage Mirroring Software v5.2 Natural and man-made disasters can occur when you least expect it - serving as a reminder that in less than a moment's notice, volumes of data loss can occur. To prevent data loss from failure, error, or disaster, HP StorageWorks Storage Mirroring Software provides replication and recovery of valuable Windows and Linux data to another server. Proactive replication is a key strategy coupled with tape backup and snapshot technology for up-to-the-second data protection. Having replicated data co-located enables customers to recover their static and transactional data in seconds to minutes. Patented replication and failover technology continuously captures byte-level data changes as they occur in your production environment and replicates those changes to one or more servers in any location without geographic limitations. By replicating only the bytes that change, Storage Mirroring Software uses the absolute minimum bandwidth required to replicate customer data. The software does not require special hardware to run and utilizes existing LAN or WAN infrastructure -saving time, additional investment, and maintenance. Storage Mirroring software is storage independent and will support any DAS, NAS, and SAN storage device. Additional flexibility is achieved with Windows and Linux operating system support. Storage Mirroring works on Windows Server 2003, Windows Server 2008, Windows Storage Server, 64-bit Windows, Windows on Itanium and Red Hat Linux. The platform flexibility, resource optimization, and application-specific protection enable customers to solidify their data and disaster protection strategies. Special note about Microsoft iSCSI Software Target and replication: All StorageWorks X1000 G2 Network Storage Systems include the Distributed File System Replication (DFS-R) feature in the pre-installed Windows Storage Server 2008 R2 operating system. DFS-R is a file-based replication technology that only replicates files when they are closed. Microsoft iSCSI Software Target does not close the virtual disk files (.vhd files) while they are in use, and so these files are not replicated during normal usage when replicating using DFS-R. Therefore, if iSCSI Software Target virtual disk files need to be replicated, DFS-R should not be used, and HP StorageWorks Storage Mirroring software should be considered instead. Storage Mirroring software asynchronously replicates each write into the file system to a secondary system, and therefore it can be used to effectively replicate iSCSI Software Target virtual disk files. Storage Mirroring will now be offered in 3 different product SKU families Stock LTU (channel stocked license(s)) E-LTU (electronic delivery - order any number of licenses - 10 or higher) LTU (paper delivery which replaces all previous 10 pack licenses -an alternative to electronic delivery) NOTE: For more information on HP StorageWorks Storage Mirroring Software: http://www.hp.com/go/storageworks/storagemirroring
HP X1000 Network Storage Servers	HP StorageWorks X1000 Upgrade to Windows Storage Server 2008 R2 Standard Software X1000 Network Storage Servers with the Microsoft Windows Storage Server 2008 Standard x64 Edition operating system are eligible for a software-only pay for OS

upgrade to the Microsoft Windows Storage Server 2008 R2 Standard x64 Edition operating system:

This upgrade requires a clean install and contains all X1000 G2 Network Storage System features, including Microsoft iSCSI Software Target and HP X1000 Automated Storage Manager Software.

* A minimum of two OS drives that are the same type and capacity (146GB minimum) must be present in the system before installation.

NOTE: Some expansion cards, including HBAs and NICs, may not be supported by Windows Storage Server 2008 R2. Check Windows Server 2008 R2 driver availability before purchase and installation.

NOTE: Check for HP and 3rd-party software qualification with 64-bit Windows Server 2008 R2 operating systems before purchase and installation.

HP StorageWorks X1000 G2 Upgrade to Windows Storage Server 2008 R2 Standard Software	TC337A

Add a Backup Solution

NOTE: For the complete listing of data protection offerings for X1000 G2 Network Storage Systems, please visit: http://www.hp.com/products1/storage/compatibility/tapebackup/NAS/index.html

Warranty

HP StorageWorks X1000 G2 Network Storage Systems come with a standard 3-3-3 warranty (3 years parts exchange, 3 years labor and 3 years onsite, next business day response). Software media is warranted to be free of physical defect for a period of 90 days from delivery.

Services Included with the Product	One year of HP Software Support, standard 9x5 business hours (software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service).

For increased uptime, productivity and ROI-HP Care Pack packaged services for Storage

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

Protect your business beyond the warranty

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Storage Services: Offering reliability, flexibility and value-just like your storage

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. http://www.hp.com/hps/storage

NOTE: Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners

Service and Support, HP Care Pack, and Warranty Information

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at http://www.hp.com/go/lookuptool

Recommended HP Care Pack Services for optimal satisfaction with your HP product.

Recommended Services

3-Year HP Support Plus 24

For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP software at a predictable cost
- Increase customer satisfaction-with no interoperability gaps

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf

HP Installation and Startup Service for X1000 G2/X3000 Storage Systems

For smooth startup, HP Installation and Startup Service for X1000 G2/X3000 Storage Systems - provides deployment of your HP ProLiant Storage Server while helping you establish readily available access to and management of your critical data and applications. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- System installation and setup by a HP technical specialist
- Reduced implementation time and cost
- Verification prior to installation that all service prerequisites are met
- Availability of an HP service specialist to answer basic questions related to this service during the orientation session
- Potential expansion of the number of shares and hosts

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-6112ENL.pdf

HP Proactive Select Service

HP Proactive Select Service improves your IT performance and manageability through the use of cost effective flexible services. HP provides technical expertise and best practices to accelerate ROI of your technology investment. Selectable proactive services span a wide range of technology and process services - a flexible way to purchase proactive services that fit your particular environment and situation.

HP Proactive Select Service is technology agnostic and purchased in addition to your choice of underlying reactive support.

- Access to a list of flexible and customizable proactive service activities
- Enhance customers' in-house IT team with complementary assistance from HP
- Improved time to solution
- Reduce business risk and project costs by accessing HP specialists
- Simplify IT operational procedures by leveraging HP best practices

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-3842ENN.pdf

Optional HP Care Pack Services that will enhance your HP product experience.

Optional Services

HP Entry Storage Data Migration Service for Windows

For customers who need to safely migrate Windows data within their TCP/IP networks with minimal impact to their operations:

You have a need to migrate data between Windows servers within your TCP/IP network. Or you have a need to migrate storage for your Windows servers. Or both. And you need to accomplish these migrations efficiently while minimizing risk at the same time.

HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process.

http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA2-4734ENW.pdf

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. www.hp.com/learn/storage

Service and Support, HP Care Pack, and Warranty Information

HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit:
http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm

Additional Services Information

For more information about HP Care Pack Services for Storage, please visit:
http://www.hp.com/hps/storage

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

Memory

Standard Memory

DDR3 Registered (RDIMM) with ECC Capabilities

- 2GB (4 x 2GB): X1400 G2 and X1500 G2
- 6GB (3 x 2GB): X1600 G2 and X1800 G2

Maximum Memory

- 32 GB (Limited by OS)

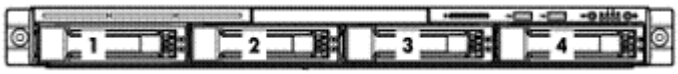
DDR3 memory population guidelines

Installation guidelines for additional memory are summarized below:

- For X1400 G2 Network Storage Systems (with nine memory slots)
  - There are three (3) channels per processor
  - There are three (3) DIMM slots for each memory channel; nine (9) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- For X1500 G2 with eighteen (18) memory slots:
  - There are three (3) channels per processor; six (6) channels per server
  - There are three (3) DIMM slots for each memory channel; eighteen (18) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- For X1600 G2 Network Storage Systems (with twelve memory slots)
  - There are three (3) channels per processor; six (6) channels total
  - There are two (2) DIMM slots for each memory channel; twelve (12) total slots
  - Memory channel 1 consists of the two (2) DIMMs that are closest to the processor
  - Memory channel 3 consists of the two (2) DIMMs that are furthest from the processor
- For X1800 G2 Network Storage Systems (with eighteen memory slots)
  - There are three (3) channels per processor; six (6) channels total
  - There are three (3) DIMM slots for each memory channel; eighteen (18) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available

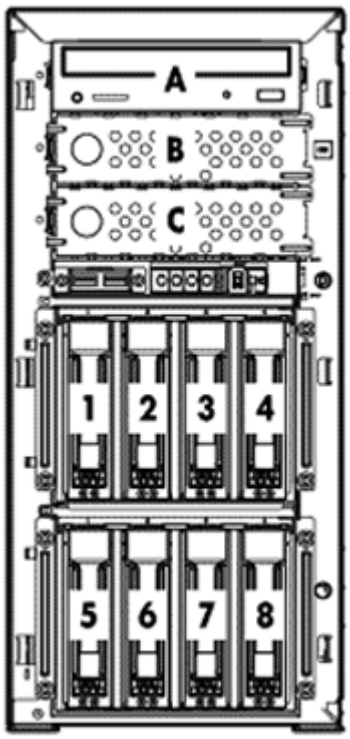
For more information on memory configuration, consult QuickSpecs for the HP ProLiant DL320 G6 Server (X1400 G2), HP ProLiant ML330 G6 Server (X1500 G2), HP ProLiant DL180 G6 Server (X1600 G2), HP ProLiant DL380 G7 Server (X1800 G2), or the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

X1400 G2



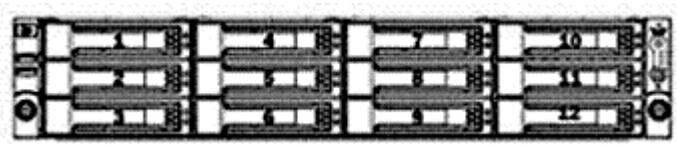
1 - 4 Four 3.5" (LFF) hot plug SATA / SAS hard drive bays

X1500 G2



1-8 Eight 3.5" (LFF) hot plug SATA / SAS hard drive bays

X1600 G2 (12 LFF HDD)



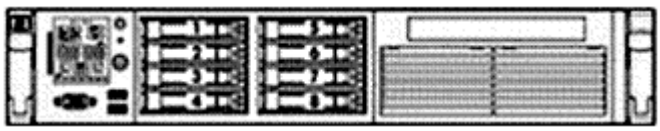
1- 12 Twelve 3.5" (LFF) hot plug SATA / SAS hard drive bays

1600 (25 SFF HDD)

Picture not available

1- 25 Twenty five 2.5" (SFF) hot plug SATA / SAS hard drive bays

X1800 G2



1 - 16 Sixteen2.5" (SFF) hot plug SAS / SATA hard drive bays (second drive bay not shown in drawing)

Hard Drive Factory Pre-configurations

Model	Drives	Position Installed	O/S Volume	Notes

Storage

X1400 G2 4TB SATA	4 x 1TB 3G 7.2K LFF SATA	1 - 4 (X1400 G2)	RAID5 (Drives 1 - 4)	Internal drives connected to SA P212 internal SAS port; external SAS port open for expansion
X1400 G2 8TB SATA	4 x 2TB 3G 7.2K LFF SATA	1 - 4 (X1400 G2)	RAID5 (Drives 1 - 4)	Internal drives connected to SA P212 internal SAS port; external SAS port open for expansion
X1500 G2 4TB SATA	4 x 1TB 3G 7.2K LFF SATA	1 - 4 (X1500 G2)	RAID5 (Drives 1 - 4)	Internal drives connected to SA P410 internal SAS port
X1500 G2 8TB SATA	4 x 2TB 3G 7.2K LFF SATA	1 - 4 (X1500 G2)	RAID5 (Drives 1 - 4)	Internal drives connected to SA P410 internal SAS port
X1600 G2	2 x 146GB 6G 15K SFF SAS	In rear drive slots	RAID 1	12 open LFF internal drive slots; Internal drives connected to SA P212 internal SAS port; external SAS port open for expansion
X1600 G2 6TB SATA	2 x 146GB 6G 15K SFF SAS 6 x 1TB 3G 7.2K LFF SATA	In rear drive slots 1 - 6 (X1600 G2)	RAID 1	Six open LFF internal drive slots; Internal drives connected to SA P212 internal SAS port; external SAS port open for expansion
X1600 G2 12TB SATA	2 x 146GB 6G 15K SFF SAS 12 x 1TB 3G 7.2K LFF SATA	In rear drive slots 1 - 12 (X1600 G2)	RAID 1	Internal drives connected to SA P212 internal SAS port; external SAS port open for expansion
X1600 G2 24TB SATA	2 x 146GB 6G 15K SFF SAS 12 x 2TB 3G 7.2K LFF SATA	In rear drive slots 1 - 12 (X1600 G2)	RAID1	Internal drives connected to SA P212 internal SAS port; external SAS port open for expansion
X1600 G2 6TB SAS	2 x 146GB 6G 15K SFF SAS 10 x 300GB 3G 15K LFF SAS	1 and 2 3 - 12 (X1600 G2)	RAID1 (Drives 1, 2)	23 open SFF slots, Internal drives connected to SA P812 internal SAS port; external SAS ports open for expansion
X1600 G2 13.8TB SAS	2 x 146GB 6G 15K SFF SAS 23 x 600GB 6G 10K SFF SAS	1 and 2 3 - 25 (X1600 G2)	RAID1 (Drives 1, 2)	Internal drives connected to SA P812 internal SAS port; external SAS ports open for expansion
X1800 G2	2 x 146GB 6G 10K SFF SAS	1 and 2	RAID1 (Drives 1, 2)	14 open SFF slots, internal drives connected to SA P812; external SAS ports open for expansion

Storage

X1800 G2 4.8TB SAS	2 x 146GB 6G 15K SFF SAS 8 x 600GB 6G 10K SFF SAS	1 and 2 3 - 10 (X1800 G2)	RAID1 (Drives 1, 2)	6 open SFF slots, Internal drives connected to P812; external SAS ports open for expansion

Power Specifications

X1600 G2 / X1800 G2

HP 750W Power Supply							
Part Number - AC 750W PSU	512327-B21						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	100	120	208	200	220	230	240
Maximum Rated Output Wattage	750	750	750	750	750	750	750
Nominal Input Current (Arms)	8.9	7.4	4.3	4.1	3.9	3.7	3.6
Max Rated Input Wattage Rating (Watts)	857	847	824	825	820	820	820
Max. Rated VA (Volt-Amp)	894	884	859	859	854	854	854
Efficiency (%) at Max. Rated Output Wattage	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30	30	30	30	30	30	30
Max. Inrush Current duration (mS)	20	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)	2925	2892	2812	2812	2797	2797	2797

X1400 G2

System Unit	**Dimensions** (H x W x D) (with bezel)	1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.20 cm)	
	Weight (approximate)	All hard drives, power supplies, and processors installed	33.50 lb (15.20kg)
	Input Requirements (per power supply)	Rated Line Voltage	90 - 132 VAC, 180 - 264 VAC
		Rated Input Current	6 A (at 100 VAC), 3 A (at 200 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	486 W (at 100 VAC), 479 W (at 200 VAC)
	BTU Rating	Maximum	1836 BTU/hr (at 100 VAC), 1706 BTU/hr (at 200 VAC)
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
		Idle	
		LWAd	6.30 B

	LpAm	52.07dBA
Operating		
	LWAd	6.38 B
	LpAm	52.77 dBA

X1500 G2

System Unit	**Dimensions** (H x W x D) (W/O footstand)	7.87 x 16.81 x 24.13 in (200 x 427 x 613 mm)	
	Weight (approximate)	All hard drives, power supplies, and processors installed	30 kg
	Input Requirements (per power supply)	Rated Line Voltage	100 to 240 VAC
		Rated Input Current	7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	852 W
	BTU Rating	Maximum	460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC) 1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC)
	System Inlet Temperature	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per 1,000 ft (1.0° C per every 305 m) above sea level to a maximum of 10,000 ft (3050 m) no direct sustained sunlight . Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C).
		Non-operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 82.4°F (28°C) maximum wet bulb temperature, noncondensing.
		Non-operating	10% to 95% relative humidity (Rh), 101.7°F (38.7°C) maximum wet bulb temperature, noncondensing.
	Altitude	Operating	10,000 ft (3000m). Maximum allowable altitude change rate is 1°C per 300m.
		Non-operating	10,000 ft (3000m). Maximum allowable altitude change rate is 1°C per 300m.

	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	

X1600 G2

System Unit	Dimensions (H x W x D) (with bezel)	3.44x 17.64 x 27.50 in (8.75 x 44.80 x 69.88cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies and processors installed)	51.5 lb (19.22 kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 - 240 VAC
		Rated Input Current	9.10 A (at 100 VAC), 4.5 A (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	910 W (at 100 VAC), 900 W (at 200 VAC)
	BTU Rating	Maximum	3107.82 BTU/hr (at 100 VAC), 3073.67 BTU/hr (at 200 VAC)
	System Inlet Temperature	Operating	50° to 95°F (10° to 35°C) at sea level with an altitude derating of 1.8°F per every 1000 ft (1.0°C per every 305 m) above sea level to a maximum of 10,000 ft (3050 m), no direct sustained sunlight. Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C).
		Non-operating	-22° to 140° F (-30° to 60° C). Maximum rate of change is 36° F/hr (20° C/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 82.4° F (28° C) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 101.7° F (38.7° C) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	10,000 ft (3050 m). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
		Non-operating	30,000 ft (9144 m). Maximum allowable altitude change rate is 1500 ft/min (457 m/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when	

		the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
		Idle	
		LWAd	6.7 B
		LpAm	51 dBA
		Operating	
		LWAd	6.7 B
		LpAm	51 dBA
	Emissions Classification (EMC)	FCC Rating	A
		Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
		NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	
X1800 G2 System Unit	Dimensions (H x W x D) (with bezel)	SFF Drives: 3.38 x 17.54 x 27.25 in (8.59 x 44.55 x 69.22 cm) LFF Drives: 3.38 x 17.54 x 29.25 in (8.59 x 44.55 x 74.30 cm)	
	Weight (approximate)	Maximum (all hard drives, power supply, and processor installed)	60.00 lb (27.27 kg)
		Minimum (one hard drive, power supply, and processor installed)	47.18 lb (21.45 kg)
	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC
		Rated Input Current	For 1200 W Power Supply: 10 A (at 100 VAC), 4.9 A (at 200 VAC) For 750 W Power Supply: 8.9 A (at 100 VAC), 4.3 A (at 200 VAC) For 460 W Power Supply: 5.5 A (at 100 VAC), 2.6 A (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	For 1200 W Power Supply: 930 W (at 100 VAC), 1348 W (at 200 VAC) For 750 W Power Supply: 857 W (at 100 VAC), 824 W (at 200 VAC)

		For 460 W Power Supply: 526 W (at 100 VAC), 505 W (at 200 VAC)
BTU Rating	Maximum	For 1200 W Power Supply: 3530 BTU/hr (at 100 VAC), 4600 BTU/hr (at 200 VAC) For 750 W Power Supply: 2925 BTU/hr (at 100 VAC), 2812 BTU/hr (at 200 VAC) For 460 W Power Supply: 1794 BTU/hr (at 100 VAC), 1725 BTU/hr (at 200 VAC)
Power Specifications	NOTE: To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor	
Power Supply Output (per power supply)	Rated Steady-State Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC) For 750 W Power Supply: 750 W (at 100 to 120 VAC), 750 W (at 200 to 240 VAC) For 460 W Power Supply: 460 W (at 100 to 120 VAC), 460 W (at 200 to 240 VAC)
	Maximum Peak Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC) For 750 W Power Supply: 750 W (at 100 to 120 VAC), 750 W (at 200 to 240 VAC) For 460 W Power Supply: 460 W (at 100 to 120 VAC), 460 W (at 200 to 240 VAC)
System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.

	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

Acoustic Noise

Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Idle	1P SKU	2P SKU
LWAd	4.1 B	4.7 B
LpAm	22 dBA	28 dBA
Operating	**1P SKU**	**2P SKU**
LWAd	4.1 B	4.7 B
LpAm	22 dBA	28 dBA

Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Technical Specifications

X1400 G2

Embedded NC326i Dual Port Gigabit Server Adapter	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	Four lane (x4), 100MHz PCI Express Reference Clock	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

X1600 G2

NC362i Integrated Dual Port Gigabit Server Adapter	Network Interface	Integrated 10/100/1000BASE-T Transceiver	
		Combines a triple-speed IEEE 802.3TM - Compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver.	
	Data Transfer Method	Compliant to x1 PCIe Specification	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	Performs all the physical layer functions for 10BASE-T, 100BASE-T, and 1000BASE-T Ethernet on standard Category 5 UT	

X1800 G2

HP NC382i Dual Port Multifunction Gigabit Server Adapters	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		EEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	Two RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
		1000BaseTX	Category 5 or higher UTP; up to 328 ft (100 m)

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

© Copyright 2011 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice.

Windows is a US registered trademark of Microsoft Corporation. Intel is a US registered trademark of Intel Corporation.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.